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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,089	05/31/2006	Tetsuro Mizushima	128197	9465

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EXAMINER	
HIGGINS, GERARD T	

ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
06/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,089	MIZUSHIMA ET AL.	
	Examiner	Art Unit	
	GERARD T. HIGGINS	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) *20-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19 and 25-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/31/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed 04/18/2008 has been entered. Currently, claims 1-28 are pending and claim 20 has been amended.

Election/Restrictions

2. Applicant's election with traverse of Group I, claims 1-19 and 25-28 in the reply filed on 04/18/2008 is acknowledged. The traversal is on the ground(s) that *a priori* lack of unity cannot be shown because the amended claims share all of the same special technical features. This is not found persuasive because the International Search Report indicates that references taken in combination demonstrate that none of the special technical features of claim 1 and claim 20 define a contribution over the prior art. This therefore means that the inventions lack unity.

The requirement is still deemed proper and is therefore made FINAL.

3. Claims 20-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 04/18/2008.

Priority

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

5. The disclosure is objected to because of the following informalities:

a. The section on page 4, lines 4-6 and page 5, lines 2-4 are awkward. It appears that applicants are trying to say that the spacer section is formed to have a "thickness larger than an inner portion of the optical material layer."

b. On page 8, line 16 "abut" appears to be misspelled.

Appropriate correction is required.

Claim Objections

6. Claims 14 and 18 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claims are drawn to optical material layers comprised of two and three materials, respectively; however, they are dependent from claim 8, which states that the optical material layer "is formed of a single material layer."

7. Claims 3 and 5 are objected to because of the following informalities: please see the objections to the specification section 5a. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-19 and 25-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claims 1, 4, and 5, the section "containing any of...***and*** a solution of an ionic bond crystal material dissolved in a solvent" (emphasis added) is indefinite. The phrase "containing any of A, B, and C" is indefinite, while "containing any of A, B, or C" is definite.

Claims 6, 25, and 26 recite the limitation "the organosilicon resin" in the second and third lines of the claim. There is insufficient antecedent basis for this limitation in the claim. This should more appropriately be "the organosilicon resin layer."

With regard to claims 6, 25, and 26, the term "approximately the same" is a relative term which renders the claim indefinite. The term "approximately the same" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear how similar the refractive indices must be in order to be approximately the same.

Claim Rejections - 35 USC § 103

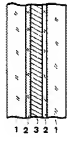
10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1, 6-8, 11, 14, 15, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga et al. (JP 01-231082) in view of Otaki et al. (JP 2002-236439) as evidenced by Travnicek (3,996,187).

With regard to claim 1, Yoshinaga et al. disclose the device of Figure 1.

第 1 図



They disclose an optical component comprised of a holographic film **3**, which is equivalent to applicants' optical material layer, an index of refraction matching fluid **2** covering the holographic film, which may be silicone oil (an organosilicon resin layer), and then a substrate **1** and solid component **1**, which are both glass substrates; however, they do not specifically set forth the materials of the holographic recording layer.

Otaki et al. teach a volume holographic recording medium. The recording layer is comprised of an organic-inorganic hybrid polymer of general formula (1), which is formed by hydrolysis polycondensation [0029]. The solution is then applied to a base material film, which is equivalent to applicants' substrate [0059] to [0060], and dried to form the optical material layer [0063].

Since Otaki et al. and Yoshinaga et al. are both drawn to volume type holographic materials; it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the known holographic recording materials of Otaki et al. as the recording layer **3** of Yoshinaga et al. The results of which would have been completely predictable to one having ordinary skill in the art of holography; furthermore, one of ordinary skill would understand that an index of refraction liquid of silicone oil would be completely appropriate for the inorganic-organic hybrid recording materials of Otaki et al. as they have similar structural characteristics, and would therefore intrinsically have similar indices of refraction. This is further evidenced in Travnicek, which states that various silicone oils are known to have refractive indices of 1.43 to 1.49 (col. 2, line 55 to col. 3, line 9). The motivation for this combination can be seen at [0083] of Otaki et al., where they state that the materials of their invention have good performance with respect to sensibility and transparency, but also have toughness and thermal resistance.

With regard to claims 6, 8, 11, 14, 15, and 18, the silicone oils of Yoshinaga et al. will intrinsically have an index of refraction that is approximately equal to or within 0.05 of the index of refraction of the inorganic-organic hybrid materials, [0046] and Travnicek

values. The silicone oils are chosen to be an index of refraction matching layer, and therefore they will intrinsically satisfy the limitations of the abovementioned claims because when the optical material layer is comprised of more than one material the effective index of refraction will be a weighted average based on the molecular composition of the optical material layer. The silicone oil is chosen to be approximately the same as the effective/average refractive index of the optical material layer, which therefore means it will intrinsically be within the minimum and maximum indices of refraction; furthermore, it would have been obvious to one having ordinary skill in the art to vary the individual ratios of all the components in the optical material layer to arrive at an appropriate index of refraction that can be matched by an appropriate index of refraction matching layer.

With regard to claim 7, the optical material layer taught by Otaki et al. is comprised of siloxanes [0027].

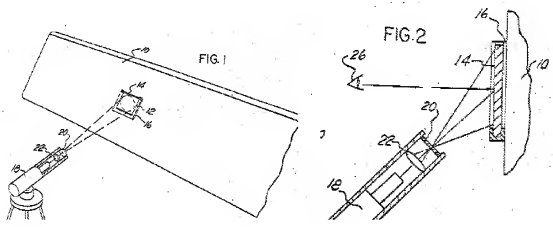
With regard to claim 19, the glass substrates **1** of Yoshinaga et al. are transparent to allow for recording onto the holographic film.

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga et al. (JP 01-231082) in view of Otaki et al. (JP 2002-236439) as evidenced by Travnicek (3,996,187) as applied to claims 1 above, and further in view of Penn (3,897,995).

With regard to claim 2, Yoshinaga et al. in view of Otaki et al. as evidenced by Travnicek teach all of the limitations of applicants' claim 1 in section 13 above; however,

they fail to teach a spacer layer that surrounds the outer periphery of the optical material layer provided between the substrate and the solid component, the space being formed to have a thickness larger than that of the optical material layer.

Penn teaches the device of Figure 1 and 2.



The holographic recording material has a spacer **16** that is thicker than the optical material layer **14** and separates the substrate **12** and the solid component **10**. It is clear that it is thicker than the optical material layer from the Figure 2, and also from the disclosure at col. 3, lines 52-67. The spacer surrounds the optical material layer on the outer periphery thereof.

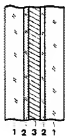
Since Yoshinaga et al. in view of Otaki et al. as evidenced by Travnicek and Penn are all drawn to holographic recording materials, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the spacer units of Penn into the holographic recording plate of Yoshinaga et al. in view of Otaki et al. The results of the combination would have been predictable to one having ordinary skill in the art; further, each of the components would have performed the same in combination as they had separately. The motivation for doing so is to produce a

holographic recording plate that had excellent parallelism between the optical recording material and the substrate. The use of spacers is well known in the art of holography; further, it is well-known to provide said spacers in order to establish a space to put the index of refraction matching layer seen in Yoshinaga et al.

13. Claims 4, 9, 12, 16, 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga et al. (JP 01-231082) in view of Otaki et al. (JP 2002-236439) and Penn (3,897,995) as evidenced by Travnicek (3,996,187).

With regard to claim 4, Yoshinaga et al. disclose the device of Figure 1.

第 1 図



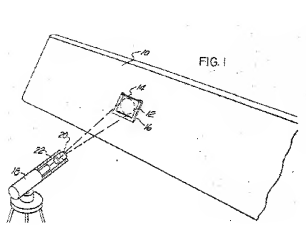
They disclose an optical component comprised of a holographic film **3**, which is equivalent to applicants' optical material layer, an index of refraction matching fluid **2** covering the holographic film, which may be silicone oil (an organosilicon resin layer), and then a substrate **1** and solid component **1**, which are both glass substrates; however, they do not specifically set forth the materials of the holographic recording layer and they fail to teach a spacer layer that surrounds the outer periphery of the

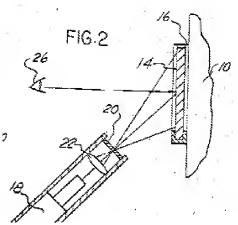
optical material layer provided between the substrate and the solid component, the space being formed to have a thickness larger than that of the optical material layer.

Otaki et al. teach a volume holographic recording medium. The recording layer is comprised of an organic-inorganic hybrid polymer of general formula (1), which is formed by hydrolysis polycondensation [0029]. The solution is then applied to a base material film, which is equivalent to applicants' substrate [0059] to [0060], and dried to form the optical material layer [0063].

Since Otaki et al. and Yoshinaga et al. are both drawn to volume type holographic materials; it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the known holographic recording materials of Otaki et al. as the recording layer **3** of Yoshinaga et al. The results of which would have been completely predictable to one having ordinary skill in the art of holography; furthermore, one of ordinary skill would understand that an index of refraction liquid of silicone oil would be completely appropriate for the inorganic-organic hybrid recording materials of Otaki et al. as they have similar structural characteristics, and would therefore intrinsically have similar indices of refraction. This is further evidenced in Travnicek, which states that various silicone oils are known to have refractive indices of 1.43 to 1.49 (col. 2, line 55 to col. 3, line 9). The motivation for this combination can be seen at [0083] of Otaki et al., where they state that the materials of their invention have good performance with respect to sensibility and transparency, but also have toughness and thermal resistance.

Penn teaches the device of Figure 1 and 2.





The holographic recording material has a spacer **16** that is thicker than the optical material layer **14** and separates the substrate **12** and the solid component **10**. It is clear that it is thicker than the optical material layer from the Figure 2, and also from the disclosure at col. 3, lines 52-67. The spacer surrounds the optical material layer on the outer periphery thereof.

Since Yoshinaga et al. and Penn are drawn to holographic recording materials, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the spacer units of Penn into the holographic recording plate of Yoshinaga et al. in view of Otaki et al. The results of the combination would have been predictable to one having ordinary skill in the art; further, each of the components would have performed the same in combination as they had separately. The motivation for doing so is to produce a holographic recording plate that had excellent parallelism between the optical recording material and the substrate. The use of spacers is well known in the art of holography; further, it is well-known to provide said spacers in order to establish a space to put the index of refraction matching layer seen in Yoshinaga et al.

With regard to claims 9, 12, 16, and 25, the silicone oils of Yoshinaga et al. will intrinsically have an index of refraction that is approximately equal to or within 0.05 of the index of refraction of the inorganic-organic hybrid materials, [0046] and Travnicek values. The silicone oils are chosen to be an index of refraction matching layer, and therefore they will intrinsically satisfy the limitations of the abovementioned claims because when the optical material layer is comprised of more than one material the effective index of refraction will be a weighted average based on the molecular composition of the optical material layer. The silicone oil is chosen to be approximately the same as the effective/average refractive index of the optical material layer, which therefore means it will intrinsically be within the minimum and maximum indices of refraction; furthermore, it would have been obvious to one having ordinary skill in the art to vary the individual ratios of all the components in the optical material layer to arrive at an appropriate index of refraction that can be matched by an appropriate index of refraction matching layer.

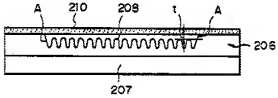
With regard to claim 27, the optical material layer taught by Otaki et al. is comprised of siloxanes [0027].

14. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga et al. (JP 01-231082) in view of Otaki et al. (JP 2002-236439) as evidenced by Travnicek (3,996,187) as applied to claim 1 above, and further in view of Inokuchi et al. (5,064,258).

With regard to claim 3, Yoshinaga et al. in view of Otaki et al. as evidenced by Travnicek teach all of the limitations of applicants' claim 1 in section 13 above; however, they fail to teach a spacer layer that is formed between the substrate and the solid component by curing the outer periphery of the optical material layer, the spacer being formed to have a thickness larger than that of an inner portion of the optical material layer.

Inokuchi et al. teach the holographic device of Figure 22.

Fig. 22



The device is comprised of an optical material layer **206**, which has been UV cured in such a way that the edge regions of the optical material layer are thicker than the inner portions (col. 15, lines 42-69).

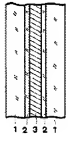
Since Yoshinaga et al. in view of Otaki et al. as evidenced by Travnicek and Inokuchi et al. are all drawn to holographic devices, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the spacer of Inokuchi et al. into the device of Yoshinaga et al. in view of Otaki et al. The results of such a combination would have been predictable to one having ordinary skill; further, each of the elements would have performed the same in combination as they had separately. The motivation for doing this combination would be to eliminate the

step of applying an additional spacer, which is cumbersome, and also it would be cheaper to provide the spacer of the same material as the optical material layer.

15. Claims 5, 10, 13, 17, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga et al. (JP 01-231082) in view of Otaki et al. (JP 2002-236439) and Inokuchi et al. (5,064,258) as evidenced by Travnicek (3,996,187).

With regard to claim 5, Yoshinaga et al. disclose the device of Figure 1.

第 1 図



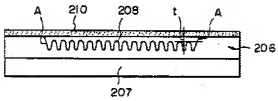
They disclose an optical component comprised of a holographic film **3**, which is equivalent to applicants' optical material layer, an index of refraction matching fluid **2** covering the holographic film, which may be silicone oil (an organosilicon resin layer), and then a substrate **1** and solid component **1**, which are both glass substrates; however, they do not specifically set forth the materials of the holographic recording layer and they fail to teach a spacer layer that is formed between the substrate and the solid component by curing the outer periphery of the optical material layer, the spacer being formed to have a thickness larger than that of an inner portion of the optical material layer.

Otaki et al. teach a volume holographic recording medium. The recording layer is comprised of an organic-inorganic hybrid polymer of general formula (1), which is formed by hydrolysis polycondensation [0029]. The solution is then applied to a base material film, which is equivalent to applicants' substrate [0059] to [0060], and dried to form the optical material layer [0063].

Since Otaki et al. and Yoshinaga et al. are both drawn to volume type holographic materials; it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the known holographic recording materials of Otaki et al. as the recording layer **3** of Yoshinaga et al. The results of which would have been completely predictable to one having ordinary skill in the art of holography; furthermore, one of ordinary skill would understand that an index of refraction liquid of silicone oil would be completely appropriate for the inorganic-organic hybrid recording materials of Otaki et al. as they have similar structural characteristics, and would therefore intrinsically have similar indices of refraction. This is further evidenced in Travnicek, which states that various silicone oils are known to have refractive indices of 1.43 to 1.49 (col. 2, line 55 to col. 3, line 9). The motivation for this combination can be seen at [0083] of Otaki et al., where they state that the materials of their invention have good performance with respect to sensibility and transparency, but also have toughness and thermal resistance.

Inokuchi et al. teach the holographic device of Figure 22.

Fig. 22



The device is comprised of an optical material layer **206**, which has been UV cured in such a way that the edge regions of the optical material layer are thicker than the inner portions (col. 15, lines 42-69).

Since Yoshinaga et al. in view of Otaki et al. as evidenced by Travnicek and Inokuchi et al. are all drawn to holographic devices, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the spacer of Inokuchi et al. into the device of Yoshinaga et al. in view of Otaki et al. The results of such a combination would have been predictable to one having ordinary skill; further, each of the elements would have performed the same in combination as they had separately. The motivation for doing this combination would be to eliminate the step of applying an additional spacer, which is cumbersome, and also it would be cheaper to provide the spacer of the same material as the optical material layer.

With regard to claims 10, 13, 17, and 26, the silicone oils of Yoshinaga et al. will intrinsically have an index of refraction that is approximately equal to or within 0.05 of the index of refraction of the inorganic-organic hybrid materials, [0046] and Travnicek values. The silicone oils are chosen to be an index of refraction matching layer, and therefore they will intrinsically satisfy the limitations of the abovementioned claims

because when the optical material layer is comprised of more than one material the effective index of refraction will be a weighted average based on the molecular composition of the optical material layer. The silicone oil is chosen to be approximately the same as the effective/average refractive index of the optical material layer, which therefore means it will intrinsically be within the minimum and maximum indices of refraction; furthermore, it would have been obvious to one having ordinary skill in the art to vary the individual ratios of all the components in the optical material layer to arrive at an appropriate index of refraction that can be matched by an appropriate index of refraction matching layer.

With regard to claim 28, the optical material layer taught by Otaki et al. is comprised of siloxanes [0027].

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited but not used art relate to similar structures of holographic recording media. With regard to the other references on the International Search Report, they are considered cumulative to the present rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERARD T. HIGGINS whose telephone number is (571)270-3467. The examiner can normally be reached on M-F 7:30am-5pm est. (1st Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gerard T Higgins, Ph.D.
Examiner
Art Unit 1794

/Gerard T Higgins, Ph.D./
Examiner, Art Unit 1794

/Callie E. Shosho/
Supervisory Patent Examiner, Art Unit 1794